

A · L · E · R · T

— to support environmental research & development in Alberta —

DATE

**APPLICATION FOR RESEARCH GRANT
ALBERTA ENVIRONMENTAL RESEARCH TRUST**

Type or Black Pen

APPLICANT		AFFILIATION OR COMPANY
NAME <input type="text"/>		
ADDRESS <input type="text"/>		
TELEPHONE BUS. <input type="text"/>	/ RES. <input type="text"/>	
POSTAL CODE <input type="text"/>		
SHORT TITLE OF PROPOSED PROJECT <input type="text"/>		
PROJECT OBJECTIVES <input type="text"/>		
Signature of Applicant <input type="text"/>		STARTING DATE <input type="text"/>
Date <input type="text"/>	Authorization <input type="text"/>	DURATION <input type="text"/>
Date <input type="text"/>	Authorization <input type="text"/>	TOTAL FUNDS REQUESTED <input type="text"/>
Date <input type="text"/>	Authorization <input type="text"/>	YEAR 1 <input type="text"/>
Date <input type="text"/>	Authorization <input type="text"/>	YEAR 2 <input type="text"/>
Date <input type="text"/>	Authorization <input type="text"/>	YEAR 3 <input type="text"/>

"The Applicant shall indemnify and hold harmless the Trust, its employees, agents, and consultants from any and all claims, demands, actions, and costs whatsoever that may arise out of, directly or indirectly, the procedures by which the application is evaluated, or by reason of any act or omission of the Trust, its employees, agents, or consultants in the execution of their recommendations and decisions. Such indemnification shall survive the Trust's final decision regarding the application."

**FUNDING
INFORMATION**
Pages 4 and 5



THE ENVIRONMENTAL CHALLENGE



The environmental challenges facing us today can be viewed as overwhelming in their complexity from a scientific, social and political perspective.

However, these challenges also represent significant opportunities for those individuals, institutions and companies which position themselves to contribute towards achieving solutions.

It is particularly important that we place increased emphasis on research and development of environmentally sound technologies. The market potential for technologies which

minimise environmental impacts, use resources more efficiently, protect human health, are more cost effective, is immense particularly when we consider the needs of developing countries.

Alberta and Canada are ideally positioned to contribute significantly in this area. In fact, the contribution by Alberta and Canada provided by development and transfer of environmentally sound technologies may be much greater than many other domestic actions being considered.

The Alberta Environmental Research Trust can play a key role in capturing this opportunity area by providing necessary funds. I would encourage individuals, companies and institutions with an interest in technology research and development to consider the Trust as a funding mechanism.

With common commitment to this area of research, I'm confident that significant progress can be made towards solving the environmental challenges facing us.

G.R. Lambert
Vice Chairman

Insight . . .

In this our second issue of "ALERT" we bring to your attention some of the history and development of the Alberta Environmental Research Trust as well as an article describing one of the many R&D projects funded during the past year.

We know there are many projects "out there" that would deal, in a very significant manner, with some of the environmental problems we currently face but are not being investigated due to a lack of source funding. Thus, in this issue, on pages 4 and 5, we bring information regarding funding criteria of AERT. We are doing this because we want our readers to know a source of funds does exist especially if the researcher has an active co-funder. In essence, our co-funding programme offers the opportunity to conduct environmental R&D using 50 cent dollars.

AERT FUNDING & PROCEDURES

The Alberta Environmental Research Trust was created in the spring of 1971 by enactment of the Legislative Assembly of Alberta to provide a mechanism for "the expansion of applied and fundamental research and development relative to environmental improvement."

Since its inception the Trust has received an annual grant from the Alberta Government, however it is administered by an independent Board of Trustees whose objective is to provide financial and technical support for Alberta research projects to protect or enhance the environment.

Over the past twenty years the Trust has provided more than \$5 million to Alberta scientists to co-fund many

projects which enhance our technology to cope with environmental problems related to water, air, and land pollution. Some of this AERT-supported research has progressed to commercial applications.

More recently the Trust has acquired access to the Alberta Lottery Fund, and this enables it to support major environmental projects to ensure the sustainable development of Alberta's natural resources. The cost of this research is shared equally between the Trust and the industrial or corporate sponsor. Since the Trust is registered as a "charitable organisation", the industrial co-funders could benefit from tax concessions.

The Trust is receptive, at any time, to

technical proposals that are within its mandate. Most of the successful applicants are qualified scientists and/or their private sector sponsors. Applicants should be familiar with the state-of-the-art in their proposed research to identify the technology gaps. Where required, Trust personnel can be made available to provide advice or even to help scope the proposal.

The application procedures are relatively simple. When a formal proposal is submitted, it is first evaluated for technical merit by our Grants Advisory Committee. The Committee's recommendations are presented to the Board of Trustees for a final decision. The average response time is about two months.

MAR 12 1991

LOTTERY FUNDING COMMITTED FOR ENVIRONMENTAL RESEARCH

The Hon. Ken Kowalski, Minister responsible for lotteries, announced in November a new lottery funding agreement to commit up to \$200,000 in matched grant support for environmental research in Alberta. The funding will be used to carry out research projects beneficial to the quality of Alberta's environment, under the authority of the Alberta Environmental Research Trust (AERT). The funding is contingent upon equivalent matching funds being raised for each project through private sponsorship.

A cheque in the amount of \$25,000 for the first research project approved under the terms of the funding agreement was presented jointly by Mr. Kowalski and Mr. Ty Lund, MLA Rocky Mountain House Constituency to Mr. Harold Page, Chairman of the AERT. At a total cost of \$50,000, the research is intended to determine the biomonitoring impacts of sulphur dust and lime on soil microbial processes in a Lodgepole pine forest. The matching amount of \$25,000 has been provided for the research project by the Canadian Petroleum Association (CPA).

Mr. Kowalski stated, "I am pleased the Lottery Fund can assist some of the many worthy projects undertaken by

Left to Right: Mr Ty Lund, Mr. Harold Page and the Hon. Ken Kowalski.



AERT. These matching funds will allow the Trust to proceed with new research initiatives which will positively impact the quality of the environment in which we live."

Mr. Lund noted, "This Alberta Lottery Fund support will help enable the AERT to enhance their objectives for service to the community and the people of Alberta."

Mr. Page commented, "This inno-

vative assistance will provide the means with which to pursue many important research projects, and advance our scientific knowledge about the environment. I am pleased the Trust has received such a positive response from the provincial government.

Details of the CPA biomonitoring project appear elsewhere in this edition of "ALERT."



ALERT Helping Alberta to be on the cutting edge of Environmental Technology.

AERT HELPS SOLVE ENVIRONMENTAL PROBLEMS

AERT offers a special programme to provide financial and technical assistance to Alberta industry to conduct research or development (R&D) to protect or enhance the environment. The R&D programmes of prime interest to AERT are those which pertain to liquid, atmospheric, or solid effluents from industrial operations. Furthermore, the expertise and state-of-the-art facilities of the Alberta Environmental Centre (AEC) in Vegreville are available to AERT grantees. The appropriate role for AEC being determined by joint consultations.

FUNDING GUIDELINES

WHO CAN APPLY?

- Any person, corporation, or organisation with knowledge of an environmental problem and a sound scientific concept for its possible solution.

TECHNICAL MERIT

- Each proposal is examined by the Grants Advisory Committee to assess its technical merit. The personnel or organisation assigned to conduct the R&D (which must be done in Alberta) are examined closely.

CO-FUNDING REQUIREMENTS

- Applicant is required to have equal co-funding of its R&D project from the private sector.
- The industrial co-funder can opt to do the R&D in-house.
- The R&D may also be contracted to independent consultants having the appropriate scientific disciplines if desired.
- The private sector co-funder shares the project decisions and control with AERT.

WHERE to APPLY?

- There are no deadlines for grant applications but they are contingent on the availability of funds. Evaluation process can take several months and if it is discovered that there is a need for preliminary discussions, AERT can assign one of its voluntary technical advisors to conduct a preliminary assessment of the project concept.
- AERT should be considered as a source of R&D funds that may not otherwise be funded by industry, university, or government departments.
- Applications for funding should be made in writing to the Manager at the Trust's offices in Calgary.

TAX INCENTIVES

The objects of the Trust are twofold:

- to seek and receive property by gift, bequest, devise, transfer or otherwise and
- use and administer such income for applied and fundamental R&D for the environmental improvement in Alberta.

As an extra bonus, cash contributions to AERT projects from the private sector enable AERT to access funding from the Lottery Fund, thereby enhancing the prospects for expanding the environmental R&D assistance to industry.

And because the Alberta Environmental Research Trust is registered as a Charitable Organisation, it is authorised to provide official receipts for cash contributions to its projects. Where income tax regulations permit, these receipts serve as tax incentives.

SAMPLE

GRANT AGREEMENT Description of Grant

Grantee (Name and Address):

Amount of Grant:

Period of Grant:

Purpose of Grant:

Payment Schedule:

Principle Investigator(s):

General Conditions

1. **Purpose.** The grant shall be used solely for the described purpose or purposes and shall be so designated on the grantee's record. No changes in the purpose of the grant will be allowed without the Trust's prior written approval.
2. **Program Monitoring and Evaluation.** The Trust may, at its expense, monitor and conduct an evaluation of operation under this grant, which may include visits by representatives of the Trust to observe the Grantee's program procedures and operations and discuss the program with the Grantee's personnel. The principal investigator(s) shall be named, and there shall be no change unless by written agreement between the Grantee and the Trust, signed by a designated officer of the Trust and the Grantee or his (her) designate.
3. **Accounting and Financial Review.** A complete and accurate record of the funds received and expenses incurred under this grant must be maintained by the Grantee. The Trust may, at its expense and on reasonable notice to the Grantee, audit or have audited the records of the Grantee insofar as they relate to the activities funded by this grant.
4. **Budget.** No changes may be made in budgetary allocations without the Trust's prior written approval. The grant is intended to support a specific project and to provide general support for a specific time period.
5. **Reversion of Grant.** Any portion of the grant unexpended at the completion, or termination of the project or the end of the time period shall be returned to the Trust.

6. **Additional Support.** By making this grant, the Trust assumes no obligation to provide other or additional support for the Grantee.

7. **Publicity.** In the event that the Grantee wishes to issue a news release concerning the grant, the text of the release must be submitted to the Trust for review and approval not less than ten (10) days prior to the release date. News releases relating to the final report should not be made until thirty days subsequent to the receipt by AERT of the final report.

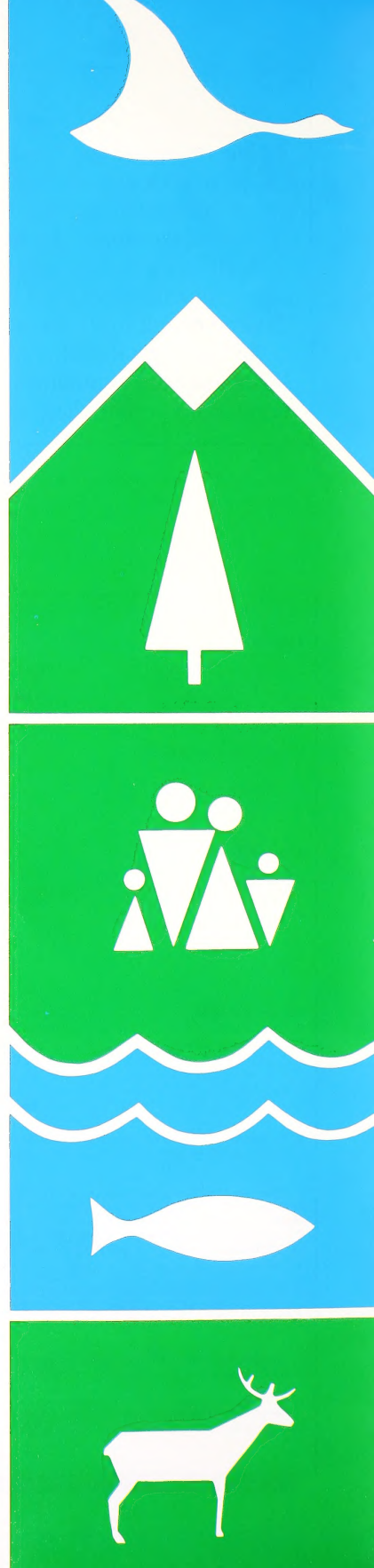
8. I hereby certify that the whole of this expenditure will be incurred on this research project; that my estimated budget is considered reasonable to perform the research contained in my proposal; that I agree to accept the following conditions:

- a) provide the Trust, within 60 days after completion of the project, a concise report embodying the research findings including two to three pages of summary and conclusions as well as a concise set of recommendations, of the project funded;
- b) that 10% of the total grant will be held until "a" has been complied with;
- c) accept the terms of payment of the grant as determined by the Trust;
- d) the Trust shall share rights of ownership, copyright, patent, or any other claims to any discovery, development or finding arising out of the research funded as defined in the Grant Agreement. And, therefore, I shall pay to the Trust 5% (unless otherwise negotiated) of gross proceeds realized by me or by others from the sale, license or use of any device, process or thing resulting from monies spent for the Purpose of the Grant or any patents, copyrights or other form of industrial protection obtained by me or my assigns in that regard;
- e) the Grantee shall indemnify and hold harmless the Trust, its employees and agents from any and all claims, demands, actions and costs whatsoever that may arise out of, directly or indirectly, the carrying out of the research project, or by reason of any act or omission of the Grantee, his employees or agents in the performance of this agreement. Such indemnification shall survive termination of this agreement.

9. **Special Conditions.** The Grantee accepts and agrees to comply with the following Special Conditions, if any.

EXTRACT FROM GRANT AGREEMENT CONDITIONS

Dr. E. E. Ballantyne Award for Excellence in Environmental Research, presented by Mr. H. V. Page, Chairman of the Board in 1989, and a cash award presented by Dr. B. R. Hammond, Chairman of the Grants Advisory Committee to Dr. E. E. Hargesheimer, City of Calgary, Glenmore Waterworks Laboratory for her project "WATER QUALITY, Legionella, Aeromonasa and Campylobacter in Source and Drinking Water."



IMPACT OF SULPHUR AND LIME DUSTS ON FOREST SOIL AND VEGETATION

Crisscrossing Alberta is an array of sour gas plants. Producing gas from fields formed at the whim of ancient geological events, Alberta's largest sour gas plants straddle the foothills of the Rocky mountains.

These vast and valuable fields contain gas "soured" by a poisonous substance called hydrogen sulphide. Producing sour gas has made the Canadian petroleum industry unique in the world. Nowhere else must gas producers remove so much sulphur from natural gas before it is ready for market. As a result, no other country exports as much sulphur as Canada. And most of that sulphur comes from Alberta's large and efficient gas plants.

Like most industrial processes, however, extracting and shipping sulphur has environmental consequences. This story is about just one of them: sulphur dust.

Removing hydrogen sulphide results in great yellow blocks of raw sulphur dotted around the provincial landscape. These blocks sometimes dwarf the plants which produced them. Some plant operators transport that sulphur to market in liquid form. Others melt the sulphur, then form it into prills (small beads) or slate. Because they cannot remelt some sulphur blocks, operators occasionally break them up and ship the sulphur in chunks. There are economic and environmental pros and cons to each method.

The principal environmental problem with handling solid sulphur - whether prills, slate or broken chunks - is the production of sulphur dust. The dust blows onto surrounding soil, making it more acidic. When the land is agricultural, farmers control the problem by ploughing in powdered limestone. In forested land like most of the foothills, gas plant operators take other steps to restore the alkalinity of dusted areas.

The most common step - and one

Alberta Environment requires - is to use aircraft to spread powdered limestone in these areas. Known as "liming," this neutralises the acidity in the soil. In so doing, it enables forest trees and vegetation to continue to grow.

What will be the long term effects of high levels of sulphur dusting and liming? In 1987, University of Calgary researcher, Suzanne Visser, began a study to find out. From headquarters at the Kananaskis Environmental Research Centre, Ms. Visser staked out thirty study plots in a lodgepole pine forest. Three plots were set aside as controls. On the others she applied low, medium, and high concentrations of sulphur dust, lime, or a combination of the two. The objective is to determine the effects of these substances on forest soils and vegetation.

By the fall of 1989, M. Visser was nearly halfway through the study. At

that time, she had determined that high rates of sulphur dust application had caused extreme acidification of the upper soil layers, thereby severely disrupting the soil chemistry. However, the forest vegetation did not display any ill effects. The number of species of grasses, shrubs, lichens and herbs in the highly acidified plots was very similar to that in the control plots. Mosses, particularly the feather mosses, were the exception. Their abundance was reduced by approximately 50% in the heavily dusted plots indicating that they are very sensitive to soil acidification caused by sulphur dusting.

Alterations of the soil chemistry as a result of liming have been minimal compared with the effects of sulphur dusting. Although liming has made the soil more alkaline, there have been no adverse effects on the vegetation as yet. Because the lime and sulphur dusts have settled near the top of the soil profile,

con'd on back page

Project Manager Lin Callow seen presenting research scientist Suzanne Visser with matching funds from the CPA, on the left Mr. Harold Page, Chairman AERT.



IMPACT OF SULPHUR *continued* . . .

chemical alterations have been limited to this region. Not yet clear is the timescale involved before the chemistry of the deeper soil layers is affected and how the vegetation will respond if the chemistry in the rooting zone is upset.

Nutrient uptake by plants relies heavily on the soil chemical status. Any changes in the soil chemistry will affect the nutrition of plants. Therefore, nutrient uptake into the leaves of two of the most common plant species

occurring in the research site, i.e. hairy wild rye and Canadian buffalo berry, is being monitored on an annual basis. To date, there have been no significant effects of sulphur or lime on plant nutrient uptake.

Funds for the first two years of the study came from the Environmental Research Advisory Council. This Council is a petroleum industry/government research body in which the Canadian Petroleum Association represents industry. This year, the AERT joined the

project as a co-sponsor.

Project Manager is Lin Callow, an environmental coordinator at Gulf Canada. "This project is important to the petroleum industry," he says. "It will enable us to predict in advance what will happen to sulphur dusted forests around sour gas plants handling solid sulphur. The results of this study may indicate that we have to change our operating practice. If it does, we want to know as soon as possible."



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620 - 7th Ave. S.W.
Calgary, Alberta
T2P 0Y8

Att: John F. Russell



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